CLAIMS

What is claimed is:

1. A centralized operating center for packaging a large number of diverse television programs for selective remote display by viewers, the operations center comprising:

means for receiving television programs in analog or digital format, each having video and audio components;

means for coordinating the receipt of the video and audio signals;

conversion means for digitizing the analog signals;

input means for receiving input commands and specific information about each of the television programs;

database means for storing and supplying information about the television programs;

means for generating a digital program control data information signal based on the input from the input means and the database means, the signal containing specific identification of each television program received by the receiving means, including the date and time of display and the category into which the television program falls;

means for combining the digitized analog signals, any signals received in digital format and the digital program control data information signal;

means for multiplexing the signals for transmission; and

means for simultaneously transmitting the program control data information signal along with the compressed digitized audio and video signals so that variable video displays of current and future

programming can be generated from the program control data information signal and so that the downstream displays of the television programs can be selected and controlled by the viewers.

2.   The centralized operating center of Claim 1 wherein the conversion means comprises means for compressing the digital signals for transmission.

3.   The centralized operating center of Claim 1 wherein the database means further comprises means for storing and for supplying information about the viewers.

4.   The centralized operating center of Claim 1 wherein the database means is connected to the input means so that the program control information signal can be generated from information stored in the database means.

5.   The centralized operating center of Claim 1 wherein the input means comprises an local sensor and receptor which responds to voice, touch sensitive entries or input keys so that the program control information signal can be generated locally from information entered from the on-site input sensing means.

6.   The centralized operating center of Claim 1 wherein at least one of the television programs comprises a television program which is continuously and repeatedly transmitted and wherein said program control information signal continuously transmits the next incremental start time.

7.   The centralized operating center of Claim 1 wherein the means for generating a digital program control data information signal based on the input from the input means and the database means comprises at least one processing means for combining and analyzing information from the database means and input entered from the input means to generate the digital program control data information signal.

8.   The centralized operating center of Claim 1 wherein the operating center further comprises internal video storage of television programs in analog or digital format and means for acquiring external feeds of television programming both of which are accessible by and connected to the receiving means whereby either internally stored programming or externally obtained programming can be converted by the converting means, combined by the combining means and transmitted by the transmitting means along with a related digital program control information signal.

9.   The centralized operating center of Claim 1 wherein the operating center further comprises processing means for controlling the content of the program control data information signal combined with software operating the processing means based on commands entered into input means the combined processing means and software comprising:

means for creating program lineups for transmission to viewers;

means for prioritizing programs based on a plurality of factors including popularity of the program, its weighted importance and the bandwidth available to the viewer to receive the plurality of programs;

means for initiating allocation of different menus to different classes of viewers;

means for initiating bandwidth allocations so that different program content is sent to different viewers; and

means to design, create and change menus listing the variable content created by the prioritizing means and the allocation means.

10. The centralized operating center of Claim 1 wherein the digital program control data information signal comprises a category designation for each television program, each category designation selected from the group consisting of static programming, interactive services, pay for view, live sport specials, mini pays or data services

11. The centralized operating center of Claim 1 wherein the transmitting means comprises means for transmitting the signal to a plurality of selectable satellite transponders and wherein the operating center further comprises means for grouping television programs into separate groups for transmission over selected transponders

12. The centralized operating center of Claim 1 wherein the transmitting means comprises means for transmitting the signal to a plurality of selectable satellites and the operating center further comprises means for grouping television programs into separate groups for transmission to different geographical regions.

13. The operating center as claimed in claim 1 wherein the data base means comprises a plurality of databases and

wherein the operations center further comprises processing means for accessing the data bases and processing the information therein to provide the requisite digital program control information signal, the databases comprising

5 information concerning each scheduled Program, records representing the source from which each television program was obtained, optional display services available, available previews of television programs, program categories for each television program to be transmitted and price categories for

10 each television program to be transmitted.

14. The operating center as claimed in claim 1 wherein the data base means comprises a plurality of databases, each database composed of multiple related sets of data, and

15 wherein the operations center further comprises processing means for accessing the data bases and processing the information therein and management means for determining how to operate the operations center so that it provides the requisite control information signal, the databases

20 comprising:

means for storing information about each destination to which the operating center transmits;
means for storing information about rights in or ownership in each program source;

25 means for storing information about price, promotion and packaging of each program broadcast; .
means for storing information about the storage location of each internally stored program; and
means for storing information about marketing

30 and customer.

15. An operations center for use by a program packager to provide a television program delivery system, said operations center comprising:

a reception port for receiving television programs;

external collection means for gathering television programs from external sources and feeding said television programs from external sources to said reception port;

internal collection means for gathering television programs from internal sources and feeding said television programs from internal sources to said reception port;

a converter for converting any of said television programs that are in non-digital format to digital format;

means for compressing said packaged digital format programs;

packaging means for creating program control information and for packaging said digital format programs using said program control information, said packaging means comprising:

a central processing unit;

an interface to enable said program packager to enter program line-up information, wherein said interface is operably connected to said central processing unit;

storage means for storing said entered program line-up information;

logic means for arranging said stored program line-up information and for creating

~~program control information; and~~

means for generating a digital program control information signal from said program control information;

combining means for creating a combined signal, said combined signal comprising said packaged digital format programs and said digital program control information;

means for compressing said combined packaged digital format programs and said program control information; and

transmission mean, operably connected to said packaging means, for transmitting said combined signal.

16. The operations center of claim 15, wherein said packaging means comprises means for generating menu configurations; and said packaging means generates said program control information using said menu configurations.

17. The operating center of Claim 15, said operations center further comprising:

means for receiving unique cable franchise control information from cable franchises;

means for storing said unique cable franchise control information; and

wherein said generating means comprises means for including said unique cable franchise control information signal in said generated digital program control information signal.

18.   A method of allocating a given amount of bandwidth for a plurality of programs, each of said programs corresponding to one of a plurality of categories, said method comprising the steps of:

5   prioritizing each of said programs by assigning to each of said programs one of a plurality of priority levels, said plurality of priority levels including a high priority level and progressively lower priority levels;

              dividing said given amount of bandwidth so that
10   each program category receives a portion of said given amount of bandwidth;

              allocating said given amount of bandwidth to high priority programs in each category; and

              continuing said allocating step with said
15   progressively lower priority levels until at least one of the following conditions occurs:

                     all programs are allocated,

                     all of said given amount of bandwidth is allocated.

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19.   A method of transmitting a plurality of programs to a cable headend, each of said plurality of programs corresponding to one of a plurality of categories, said method comprising the steps of:

25   prioritizing each of said programs by assigning to each of said programs one of a plurality of priority levels, said plurality of priority levels including a high priority level and progressively lower priority levels;

              forming a plurality of signals, each of said signals
30   comprising programs corresponding to a single priority level.

appending a header to each of said signals,
wherein said header identifies said priority level for a
corresponding signal, thereby enabling recognition by
said cable headend; and

5 transmitting each of said headers and said
corresponding signals to said cable headend.

20. A method of transmitting programs to a plurality of
transponders, said method comprising the steps of:

10 prioritizing each of said programs by assigning to
each of said programs one of a plurality of priority
levels, said plurality of priority levels including a high
priority level and progressively lower priority levels;
forming a plurality of signals, each of said signals

15 comprising programs corresponding to a single priority
level; and
transmitting said plurality of signals to said
plurality of transponders so that none of said
transponders receives more than one of said signals.

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21. The method of claim 20 further comprising the step of
dynamically changing bandwidth allocation for at least one of
said plurality of categories.

25 22. A method of transmitting a plurality of programs in a
first amount of bandwidth for reception by a first cable
headend, and in a second amount of bandwidth for a second
cable headend, said method comprising the steps of:
prioritizing each of said programs by assigning to

30 each of said programs one of a plurality of priority
levels, said plurality of priority levels including a high
priority level and progressively lower priority levels;

dividing said first amount of bandwidth so that each program category receives a portion of said first amount of bandwidth;

forming a first allocation of bandwidth by

5   allocating said first amount of bandwidth to high priority programs in each category;

continuing said forming a first allocation step with said progressively lower priority levels until at least one of the following conditions occurs:

10   all programs are allocated;

all of said first amount of bandwidth is allocated;

dividing said second amount of bandwidth so that each program category receives a portion of said second

15   amount of bandwidth;

forming a second allocation of bandwidth by allocating said second amount of bandwidth to high priority programs in each category;

continuing said forming a second allocation step

20   with said progressively lower priority levels until at least one of the following conditions occurs:

all programs are allocated;

all of said second amount of bandwidth is allocated;

25   transmitting said first allocation of bandwidth to said first cable headend; and

transmitting said second allocation of bandwidth to said second cable headend.

30   23.   A method for generating a program control information signal for use by viewers using menus of available

programming based on program line-up information, said method comprising the steps of:

obtaining and storing program line-up information for each program, the program line-up information comprising, program name, program start time, program duration, program category and program price;

arranging said program line-up information for all programs in a menu configuration;

creating program control information using said program line-up information;

generating a digital program control information data signal using said program control information; and

continuously transmitting said digital program control information data signal simultaneously with said programs.

24.   A method of generating a digital program control data information signal for transmission to viewers of a simultaneously transmitted plurality of television programs so that variable video displays of current and future programming can be generated and so that the downstream displays of the television programs can be selected and controlled by the viewers, the method comprising:

receiving as input data entry, program names, start times, program duration and program category and price;

combining the input data with stored marketing data comprising the frequency with which programs are watched by viewers and the demographics of viewers;

weighing the data according to algorithms which assign a weight of importance to each type of data;

generating from the data a program line-up, and program position on menu formats;

5   displaying the resulting draft menu for editing; editing the menu; and

processing the edited menu to generate the digital program control data information signal for transmission to viewers.

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25.   The method of claim 24 wherein digital program control data information signal is transmitted to cable franchises and wherein the method further comprises:

means for receiving specific information relating

15   to each cable franchise that receives the signal; and

means for creating a customized signal for each cable franchise.

26.   The method of claim 24 wherein the digital program

20   control data information signal also contains information for identifying virtual channels for interactive services and data services available to viewers using service information, the method further comprising:

collecting service information on the data services

25   available;

inventorying the interactive services to be made available to the viewer;

assigning a virtual channel for the data services and the interactive services;

30   determining method of upstream transmissions for interactive services; and

creating a menu for interactive services and data services for later processing.

27. A method to assist a program packager to create a
5 transmissible data information signal which organizes stored information on television programs available for viewing into program line-ups and generates a program control information signal from the program line-ups to enable selection of television programs for viewing by viewers, the
10 method comprising:

receiving information on television programs available for viewing;

organizing the information on television programs available for viewing into program line-up information using
15 stored computer instructions including a set of computer instructions for utilizing the stored data to optimize the selection of television programs to be watched by each viewer;

editing the program line-up information;
20 generating the program control information signal using the program line-up information; and

transmitting the program control information signal as a digital data signal to each viewer of the television programs in a manner that can be displayed to each viewer so that each
25 viewer can select television programs for viewing.

28. The method of claim 27 further comprising gathering of program watched information from viewers, and wherein the organizing step further comprises:
30 targeting a television program; and

managing the yield of the programs watched information for the targeted program so that the targeted program yields higher programs watched information.

5   29.   The method of claim 27 wherein at least one of the television programs is a program service comprising a time limited series of programming offered for a defined time each day for a limited number of calendar days and wherein the program control information signal comprises information

10   providing an identification and description of the service, the starting and stopping dates and the times each day that the service can be viewed by the viewers.

30.   A method to create program services containing at least

15   one program and an interstitial audio/video for transmission, comprising:

obtaining one or more programs and interstitial audio/video;

creating events comprising:

20   combining one or more programs with one or more interstitial audio/video so that an event is longer than the one or more combined programs; and

creating an event identification for recalling the event;

25   generating program services comprising:

integrating one or more events using the event identification so that there are no disruptions to the programs or interstitial audio/video;

determining calendar days that the program

30   service will be transmitted;

defining time of day that the program service will be transmitted; and

transmitting the program service containing the integrated events on the determined calendar days at the defined time.

5   31.   The method of claim 30 wherein program services are paid for by viewers, the method further comprising:

creating a mini-pay consisting of one or more program services; and

assigning a price to the mini-pay.

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32.   A method for creating near video on demand service using programs wherein the near video on demand service is transmitted from a central location for distribution to subscribers, comprising:

15   designating a program to be available to subscribers more than once during a day;

evaluating the length of the designated program;

creating program start times using the evaluated length of the program;

20   organizing a program line-up with thedesignated program and the program start times so that the program appears in the program line-up more than once and wherein more than one designated programs is in the program line-up;

25   generating a program control information signal using the organized program line up for transmission.

33.   The method of claim 32 wherein programs may be demanded within fifteen minutes, the step of creating program start times comprises:

30   dividing the evaluated program length into multiple fifteen minutes segments and one last segment; and

identifying interstitial audio/video to be added to the last segment.

34.   The method of claim 32 wherein a monitor is used
5   further comprising:
graphically reorganizing the program line up using a monitor before generating the program control information signal.

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